

## **REMARKS**

The Applicants thank the Examiner for the examination to date and respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow.

### **I. Status of the Claims**

Independent claim 1 is amended to recite a direct methanol-type fuel cell comprising the recited polymer electrolyte. Support therefor can be found in, *inter alia*, Abstract of the present Specification. Dependent claims 2 and 4-9 are amended accordingly to reflect the foregoing amendments. Non-elected claims 3 and 10-20 are withdrawn. No new matter is introduced, and claims 1-2 and 4-9 are currently pending to be examined on their merits.

### **II. Claim Rejections – 35 U.S.C. §§ 102, 103**

Claims 1-2 and 4-9 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over US 2003/0096146 (“Koyama”). The Applicants respectfully traverse.

#### **(A) Koyama’s teachings do not anticipate the present claims**

Koyama does not teach every element recited in the present claims and thus Koyama’s teachings cannot anticipate the present claims. While not acquiescing to the grounds of the rejections, the present claims are amended to recite a direct methanol-type full cell. At the outset, nowhere does Koyama disclose such a full cell. Moreover, Koyama does not teach a polymer electrolyte, in which the ion exchange group is **directly bonded** to a part of all of the aromatic carbon ring, as recited in present independent claim 1. By contrast, Koyama discloses a polymer electrolyte, in which a sulfonic acid group (an ion exchange group) is bonded **through an alkylene group**, to an aromatic ring. See ¶ [0023] and claim 1 of Koyama.

Because Koyama does not teach each and every element recited in present independent claim 1, Koyama's teachings cannot anticipate present claim 1, or its corresponding depending claims.

Therefore, at least in view of the foregoing, the Applicants respectfully request that the rejection be withdrawn.

(B) Koyama's teachings do not render the present claims obvious

Current Obviousness Standard

The U.S. Supreme Court reaffirmed the Graham factors for determining obviousness in *KSR Int'l Co. v. Teleflex Inc.* (No. 04-1350) (U.S., April 30, 2007). The Graham factors, as outlined by the Supreme Court in *Graham et al. v. John Deere Co. of Kansas City et al.*, 383 U.S. 1 (1966), are: 1) determining the scope and contents of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; 3) resolving the level of ordinary skill in the pertinent art; and 4) evaluating evidence of secondary consideration. The Supreme Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a) and held that the proper inquiry for determining obviousness is whether the improvement is more than the predictable use of prior art elements according to their established functions. The Court noted that it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed and specifically stated:

Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was **an apparent reason to combine the known elements in the fashion claimed** by the patent at issue. To facilitate review, this analysis should be made explicit.

*KSR Int'l Co. v. Teleflex Inc.*, slip op. at 14 (emphasis added). As discussed below, the cited art cannot render the claimed invention obvious.

Koyama's teachings do not render the present claims obvious. Specifically, not only does Koyama fail to teach or suggest every element recited in the present claims, but Koyama also teaches away from the present claims. As explained above, in stark contrast to the present claimed polymer electrolyte, in which the ion exchange group is **directly bonded** to the aromatic carbon ring, Koyama teaches a polymer in which the ion exchange group is bonded to the aromatic ring **through a separate entity** (i.e., alkylene). In fact, Koyama's teachings discourage having the presently claimed direct bonding.

In stark contrast to the present invention, the entire disclosure of Koyama focuses on the advantage of having the sulfonic acid ion exchange group bonded to the aromatic ring through alkylene groups. *See e.g.*, ¶ [0023], [0054] of Koyama. This is particularly evidenced in the comparative studies, shown in Koyama. In Figure 17 (and the description associated therewith – e.g., Comparative Example 3, starting from ¶ [0162]), Koyama clearly demonstrates the teachings of Koyama discourage a direct bonding between the sulfonic acid and the aromatic ring. The durability profiles 68 and 71 both represent polymer with direct bonding, and, according to Koyama, are undesirable as compared to profiles 67, 69, and 70, which represent bonding through an alkylene group. *See e.g.*, ¶ [0603] of Koyama. In effect, Koyama teaches away from the presently claimed polymer electrolyte.

Because Koyama teaches away from the presently claimed polymer electrolyte, Koyama's teachings do not render the present claims obvious.

Therefore, at least in view of the foregoing, the Applicants respectfully request that the rejection be withdrawn.

**CONCLUSION**

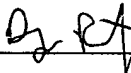
The Applicants believe that the present application is now in condition for allowance and respectfully request favorable reconsideration of the application.

The Office is invited to contact the undersigned by telephone if a telephone interview would advance the prosecution of the present application.

The Office is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

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